mericals

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MITHA TIWANA

NUMERICAL:9

CHAPPTER # 01

Exp: 1, 2, 4 1.1

- (a) 5000g
 - $= 5x10^3g$ = 5kg
- **(b)** 2000000W
- $= 2x10^{6}W$
- = 2MW
- (c) 52x10⁻¹⁰kg
 - $= 52x10^{-10}x10^{3}g$
 - $= 52x10^{-7}g$
 - $= 5.2x10^{-6}g$
 - = 5.2ug
- (d) 225x10⁻¹⁰s
 - $= 2.25 \times 10^{-6} s$
 - = 2.25us

1.2

- $1p=10^{-12}$ 1n=10⁻⁹ 1u=10⁻⁶ $1u=10^{3}n$ $1n=10^3$ $1u = 10^{6}p$
- بال بڑھنے کی شرح

1.3

- = V = d/t
- = 1 mm/1 day
- $= 1x10^{-3}/86400$
- $= 1.157 \times 10^{-5} \times 10^{-3}$
- $= 1.157 \times 10^{-8}$
- $= 11.57 \times 10^{-9}$
- = 11.57 nm/s
- (a) 1168x10⁻²⁷ 1.4
 - $= 1.168 \times 10^{-27+3}$
 - $= 1.168 \times 10^{-24}$
- (b) 32x10⁵
 - $= 3.2x^{5+1}$
 - $= 3.2 \times 10^{6}$
- (c) 725x10⁻⁵kg
- $= 725 \times 10^{-5} \times 10^{3} g$
- $= 725 \times 10^{-2} g$
- = 7.25g
- (d) 0.02x10⁻⁸
- $= 2x10^{-8-2}$
- $= 2x10^{-10}$
- 1.5 (a) 6400km
- $= 6.4 \times 10^3 \text{km}$ (b) 380000km
- $= 3.8 \times 10^{5} \text{km}$
- (c) 30000000m/s
- $= 3x10^8 \text{m/s}$
- = 1 $\sum_{i=1}^{n} c_i c_i d_i$
 - 24x60x60s
 - = 86400s $= 8.64 \times 10^{4} \text{s}$
- 0.01x4 = زيروايرر

- = 0.04cm
- 0.04cm- زيرو كوريكشن

1.7 50 = درجوں کی تعداد

- 0.5mm = سکریو کی پچ
- در ہے ای L.C =
 - = 0.5/50
- = 0.01cm0.00309kg = 3 **1.8**
- $5.05x10^{-27} = 3$
- 1.9 1.009m = 40.00450kg = 3
- $1.66 \times 10^{-27} \text{kg} = 3$ 2001s = 42
- 6.7cm **1.10** المائي
- 5.4cm = چوژائی
- LxW = 6.7x5.4 = رتبر $= 36.78 \text{cm}^2$
 - = 36cm²

CHAPPTER # 02

- Exp: 2,3,4,5,10,1 V = 36 km/h
- 2.1 = 36x1000m/3600
- V = 10 m/s
- t = 10s
- S = Vxt
 - =10x10= 100m
- $V_i = 0$

2.2

- S = 1000 m
- t = 100s
- $V_f = ?$
- $S = V_i t + \frac{1}{2} a t^2$
- $10^3 = 0 \times 100 + \frac{1}{2} \times ax(100)^2$ $a = 0.2 \text{m/s}^2$
- $V_f = V_i + at$
 - = 0 + 0.2x100
 - = 20 m/s
- $V_i = 10 \text{m/s}$
- $a = 0.2 \text{m/s}^2$
- t = 30s
- S = ?
- $V_f = ?$
- $V_f = V_i + at$
 - = 10+0.2x30
- = 10+6 = 16m/s
- $S = V_i t + \frac{1}{2} at$
- $= 10x30 + \frac{1}{2}0.2(30)^{2}$
- $= 300 + \frac{1}{2}0.2 \times 900$ = 300 + 90
- = 390m
- $V_i = 30 \text{m/s}$
- 2.4

2.3

- $V_f = 0$
- $g = -10 \text{m/s}^2$
- h = ?
- $2gh = V_f^2 V_i^2$
- $2(-10)h=(0)^2-(30)^2$
- -20h = -900
- h = -900/-20
- h = 45m
- t = 3s = واليي كا ثائم
- 2.5 يائج سيند ميس طے فاصله
- $V_i = 40 \text{m/s}$
- t = 5s
- $S_1 = Vxt$
- $S_1 = 40x5$
 - = 200m
 - دس سینڈ میں طے فاصلہ
- $V_i = 40 \text{m/s}$
- $V_f = 0$
- t = 10s
- $V_{av} = V_f + V_i/2$
 - = 0+40/2
 - = 20 m/s
- $S_2 = Vxt$
- $S_2 = 20x10$ = 200m
- S1 + S2 = كل فاصله
 - = 200 + 200
 - = 400 mۇسلرى<u>ش</u>ن
- $a_{av} = V_f V_i/t$
- $\sqrt{0}$ -40/10 = -40/10 =y4m/s²
- 2/160 2.6
- a = 0.5 m/s2
- S=100m $\forall f = ?$
- $2aS = V_f^2 V_i^2$
- 2(0.5)100=V_f²-(0)²
- $V_{f^2} = 100$
- $V_f = 10 \text{m/s}^2$
- $V_f = 10x3600/1000$
- $V_f = 36 \text{km/h}$
- 2.7 دومنٹ میں طے فاصلہ
- $V_i = 0$
- $V_f = 48 \text{km/h}$
- = 13.33 m/st = 2mint = 2x60
- = 120s
- $V_{av} = V_f V_i/2$
- = 0+13.33/2= 6.66 m/s
- $S_1 = V_{av}xt$ = 6.66x120

- = 800m
- یا کچ منٹ میں طے فاصلہ
- V = 13.33 m/s
- t = 5mint = 5x60
 - = 300s
- $S_2 = Vxt$
 - $= 13.66 \times 300$
 - = 4000 m
 - تین منٹ میں طے فاصلہ
- $V_i = 13.66 \text{m/s}$
- $V_f = 0$
- t = 3mint = 3x60
- = 180s
- $V_{av} = V_f + V_i/2$
 - = 0+13.66/2= 6.66 m/s
- $S_3 = V_{av}xt$
 - = 6.66x180= 1200 m
- S1+S2+S3 = كل فاصله
- = 800+4000+1200 = 6000m
 - 2.8

2.9

t = 6/2 = 3s

اویر جانے کا وقت

- $g = -10 \text{m/s}^2$ $V_f = 0$
- h = ?
- $V_i = ?$ $V_f = V_i + gt$
- $0 = V_i + (-10)x3$ $V_i = 30 \text{m/s}$
- $2gh = V_f^2 V_i^2$
- 2(-10)h=(0)2-(30)2-20xh=-900 h = -900/-20
- = 45mS = 800m
- $V_i = 96 \text{km/h}$
- = 26.67 m/s $V_f = 48 \text{km/h}$
- = 13.33 m/sa = ?
- $2aS = V_f^2 V_i^2$
- 2a800=(13.33)2-(26.67)2 1600a=177.68-711.28
- a = -533.6/1600= -0.3335m/s²
- اس ایکسلریشن سے طے فاصلہ $V_i = 13.33 \text{m/s}$
- $V_f = 0$
- $a = -0.3335 \text{m/s}^2$ S = ?
- $2aS = V_{f^2} V_{i^2}$ $2(-0.3335)S=(0)^2-(13.33)^2$
- 0.667xS = -177.66

S = -177.66/-0.667S = 266.4m $V_i = 26.67 \text{m/s} 2.10$ $V_f = 0$ $a = -0.3335 \text{m/s}^2$ $V_f = V_i + at$ t = Vf-Vi/at = 0-26.67/-0.3335t = 80sCHAPPTER # Exp: 1, 2, 3, 6, 7, 8 3.1 F = 20N $a = 2m/s^2$ F = mam = F/a= 20/2= 10kg 3.2 W = 147N $g = 10 \text{m/s}^2$ W = mgm = W/g= 147/10 = 14.7 kgm = 10kg3.3 $g = 10 \text{m/s}^2$ $W = mg \rightarrow F$ = 10x10= 100N3.4 F = 100Nm = 50kgF = maa = F/m= 100/50 $= 2m/s^2$ 3.5 W = 20N $a = 2m/s^2$ $g = 10 \text{m/s}^2$ W = mgm = W/g= 20/10= 2kg F = ma= 2x2 = 4NW+F = سارى فورس F = 20+4= 24Nプリナm1 = 52kg 3.6 m₂ = 48kg چيوڻاماس $g = 10 \text{m/s}^2$ $(m_1 - m_2)g$ $m_1 + m_2$ =(52-48)x10/52+48= 4x10/100=40/100

 $a = 0.4 \text{m/s}^2$ $T = \frac{2m_1m_2g}{}$ $m_1 + m_2$ = 2x52x48x10/100= 49920/100 T = 500Nm₁ = 24k | 3.7 لا كا بواماس m₂ = 26kg $g = 10 \text{m/s}^2$ m_1g $m_1 + m_2$ = 24x10/24+26a = 240/50= 4.8m/92 $T = \frac{m_1 m_2 g}{1}$ $m_1 + m_2$ =24x26x10/24+26 T = 6240/50 = 125N 3.8 $\Delta P = 22Ns$ F = 20N $F = \Delta P/t$ $t = \Delta P/F$ = 22/20t = 1.1sm = 5kg3.9 $\mu = 0.6$ $F_s = \mu F = \mu mg$ $F_s = 0.6x5x10$ = 30N3.10 m = 0.5kgr = 50cmr = 50/100= 0.5 mV = 3m/s $F_c = mV^2/r$ $= 0.5x(3)^2/0.5$ = 9NCHAPPTER # 04 Exp: 1, 2, 5 $F_x = 10-4 = 6N$ **4.1** $F_v = 6N$ $F = \sqrt{F_{\chi}^2 + F_{V}^2}$ $F = \sqrt{6^2 + 6^2}$ $F = \sqrt{72} = 8.5N$ $\theta = \tan^{-1}(F_y/F_x)$ $\theta = \tan^{-1}(6/6)$ $\theta = \tan^{-1}(1)$ $= 45^{\circ}$ 4.2 F = 50N $\theta = 30^{\circ}$

 $F_x = F\cos\theta$

 $= 50\cos 30^{\circ}$

= 50x0.866= 43.3N $F_y = F \sin \theta$ = 50sin30° = 50x0.5= 25N 4.3 $F_x = 12N$ $F_v = 5N$ $F = \sqrt{F_x^2 + F_y^2}$ $F = \sqrt{12^2 + 5^2}$ $F = \sqrt{169} = 13N$ $\theta = \tan^{-1}(F_y/F_x)$ $\theta = \tan^{-1}(5/12)$ $= 22.6^{\circ}$ 4.4 F = 100Nr = 10cm = 0.1mT = rF= 0.1x100= 10Nm 4.5 $F_{x} = 20N$ $\theta = 30^{\circ}$ $F_x = F\cos\theta$ $F = F_x/\cos\theta$ $= 20/\cos 30^{\circ}$ = 20/0.866= 23.1NF = 50N4.6 4r = 16cm = 0.16mکیل کاٹار ک ⊕ 2rF √3 2x0.16x50 ₹16Nm 4.7 3.8N • T2 = 4\4N $\nabla V = T_1 + T_2$ ₼3.8+4.4 = 8.2N 4.8 m₁ = 3kg $m_2 = 6kg$ $T_1 = mg$ = 3x10= 30N $T_2 = (m_1 + m_2)g$ = (3+5)x10= 80N $F_1 = 200N$ 4.9 $r_1 = 20cm = 0.2m$ $F_2 = 150N$ $r_2 = ?$ $\tau_1 = \tau_2$ $F_1r_1 = F_2r_2$ $r_2 = F_1 r_1 / F_2$ = 0.1x200/150

= 0.133m= 13.3cmm = 10kg4.10 $F_1 = mg$ $F_1 = 10x10 = 100N$ $r_1 = 20cm = 0.2m$ $r_2 = 50 \text{cm} = 0.5 \text{m}$ $F_2 = ?$ ا نٹی کلاک وائز = کلاک وائز ٹارک $F_2r_2 = F_1r_1$ $F_2 = F_1 r_1 / r_2$ = 100x0.2/0.5= 20/0.5= 40NCHAPPTER # 0 Exp: 1, 2 5.1 $m_1 = 1000 kg$ $m_2 = 1000 kg$ d = 0.5m $G = 6.67 \times 10^{-11} Nm^2 kg^{-2}$ $F = Gm_1m_2/d^2$ $= Gx10^3x10^3/(0.5)^2$ $=6.67 \times 10^{-11} \times 10^{6} / 0.25$ $= 26.7x10^{-11+6}$ $= 26.7 \times 10^{-5}$ $= 2.67 \times 10^{-4} \text{ N}$ $m = m_1 = m_2 = ? |5.2|$ F = 0.006673Nd = 1m $G = 6.67 \times 10^{-11} \text{Nm}^2 \text{kg}^{-2}$ $F = Gm_1m_2/d^2$ $m^2 = Fxd^2/G$ $= 0.006673(1)^2$ 6.673x10-11 = <u>6.673</u>x10⁻³ 6.673x10-11 $m^2 = 1x10^{-3+11}$ $= 10^{8}$ $\sqrt{m2} = \sqrt{(104)2}$ m = 10000 kg $M_m = 6.42x10^{23}kg$ $R_m = 3370 km$ 5.3 $= 3.370 \times 10^{6} \text{m}$ $G = 6.67 \times 10^{-11} \text{Nm}^2 \text{kg}^{-2}$ $g_m = GM_m/R^2$ $= 6.673 \times 10^{-11} \times 6.42 \times 10^{23}$ (3.370x10⁶)² = 42.84x10²³⁻¹¹ 11.35x10¹² $= 3.77 \times 10^{12-12}$ $= 3.77 \times 10^{0}$ $g_m = 3.77 \text{m/s}^2$ $g_m = 1.62 \text{m/s}^2$ $R_{\rm m} = 1740 km$

4 740 406
= 1.740x10 ⁶ m
$G = 6.67 \times 10^{-11} \text{Nm}^2 \text{kg}^{-2}$
$M_m = g_m R^2/G$ = 1.62x(1.74x10 ⁶) ²
6.673x10 ⁻¹¹
= 1.62x3.027x10 ¹²
6.673x10 ⁻¹¹
= 4.904712x10 ¹²⁺¹¹
6.673
$= 0.735 \times 10^{23}$
$M_m = 7.35x10^{22}kg$
h = 3600km 5.5
= 3.6x10 ⁶ m
$R = 6.4x10^{6}m$
$M_e = 6x10^{24}kg$
$g_m = GM/(R+h)^2$ = $6.67x10^{-11}x6x10^{24}$
$(6.4 \times 10^6 + 3.6 \times 10^6)^2$
= 40.038x10 ²⁴⁻¹¹
[(6.4+3.6)x10 ⁶] ²
= 40.038x10 ¹³
$(10x10^6)^2$ = $40.038x10^{13}$
100x10 ¹²
$= 0.4 \times 10^{13-12}$
$= 0.4 \times 10^{1}$
$g_m = 4m/s^2$
R = 48700km 5.6
$= 48.7 \times 10^6 \text{m}$
$g = GM/R^2$
$= \frac{6.67 \times 10^{-11} \times 6 \times 10^{24}}{(49.7 \times 10^{6})^{2}}$
$(48.7x10^6)^2$ = $40.038x10^{24-11}$
2371.69x10 ¹²
$= 0.017 \times 10^{13-11}$
$= 0.017 \times 10^{1}$
$g = 0.17 \text{m/s}^2$
R = 10000 km 5.7
$= 10^7 \text{m}$
$g = 4m/s^2$
$M_e = gR^2/G$
$= \frac{4x(10^7)^2}{6.67x10^{-11}}$
$= 0.599 \times 10^{14+11}$
$= 0.599 \times 10^{25}$
$M = 5.99 \times 10^{24} \text{kg}$
$\frac{g_h = \frac{1}{4}g}{5.8}$
$g_h = GM/(R+h)^2$
$(R+h)^2 = GM/g_h$
= GM/ 1/4 g
$(R+h)^2 = 4GM/g$
دونوں طرف جذر لی
$\sqrt{(R+h)^2} = \sqrt{4GM/g}$
$R+h=\sqrt{4R^2}$
R+h = 2R

```
h = 2R-R
h = R
                      5.9
h = 850km
h = 0.85 \times 10^6 \text{m}
V_0 = (GM/R + h)^{1/2}
  (6.673x10<sup>-11</sup>x6x10<sup>24</sup>)<sup>1/2</sup>
    (0.85x10<sup>6</sup>+6.4x10<sup>6</sup>)<sup>1/2</sup>
= (40.038 \times 10^{13})^{1/2}
  [(0.85+6.4)10^6]^{1/2}
= (40.038 \times 10^{13-6})^{1/2}
                    1/2
         7.25
= (5.522 \times 10^7)^{1/2}
= (55.22 \times 10^6)^{1/2}
= 7.431 \times 10^3
V_0 = 7431 \text{m/s}
h = 42000km 5.10
   = 42x10^6 m
V_0 = (GM/R + h)^{1/2}
= (6.673 \times 10^{-11} \times 6 \times 10^{24})^{1/2}
     (42x106+6.4x106)1/2
= (40.038x10<sup>24-1</sup>1)
   [(42+6.4)10<sup>6</sup>]<sup>1/2</sup>
= (40.038 \times 10^{13-6})^{1/2}
         48.4
= (0.8272 \times 10^7)^{1/2}
= (8.272 \times 10^6)^{1/2}
= 2.876 \times 10^3
V_0 = 2876 \text{m/s}
 CHAPPTER # 06
  Exp: 1, 2, 3, 4, 5
                      6.1
F = 300N
d = 35m
W = Fd
    = 300x35
    = 10500J
W = mg = 20N 6.2
h = 6m
P.E = mgh
      = 20x6
      = 120J
                      6.3
W = 12kN
    = 12000N
V = 20m/s
W = mg
m = W/g
    = 12000/10
    = 1200 kg
K.E = \frac{1}{2}mV^2
    = \frac{1}{2} \times 1200 \times (20)^2
    = 600x400
    = 240000
    = 240 \times 10^3
     = 240kJ
m = 500g
                       6.4
   = 0.5kg
```

```
V = 15m/s
K.E = \frac{1}{2}mV^2
    = \frac{1}{2} \times 500 \times (0.5)^2
    = 0.5x225/2
K.E = 56.25J
 کنزرویش آف ازجی کے قانون کے مطابق
K.E = P.E
P.E = 56.25J
                 6.5
h = 6m
V = 1.5 \text{m/s}
m = 40kg
P.E = mgh
     = 40x10x6
     = 2400J
K.E = \frac{1}{2}mV^2
     = \frac{1}{2} 40x(1.5)^2
     = 20x2.25
     = 45J
                  6.6
V = 4m/s
F = 4000N
P = W/t = F.d/t
P = F.V
  = 4000x4
  = 16000W
  = 16kW
                 6.7
F = 300N
d = 50m
t = 60s
  = W/t = F.d/t
  = 300x50/60
    250W
                 6.8
n 50kg
t = 20s
16cm = سير هي والمبال
= 161100 = 0.16m
25 = سیر هیون کی تعداد
h = 25x0.16 = 4m
P = W/t = mgh/t
  = 50x10x4/20
  = 100VV
                 6.9
m = 200kg
h = 6m
t = 10s
P = W/t = mgh/t
  = 200x10x6/10
  = 1200W
               6.10
m = 800kg
P = 1hp = 746W
t = 10mint = 600s
h = 15m
P = W/t
W = Pxt
   = 746x600
```

```
input = 447600J
W = mgh
   = 800x10x15
output = 120000J
E_f = (output/input)100
= 120000 \times 100
  447600
E_f = 26.8\%
 CHAPPTER # 07
       Exp: 1, 2
m = 850g
 =850/1000=0.85kg
V =40cmx10cmx5cm
  \frac{40m}{1000} \times \frac{10m}{1000} \times \frac{5m}{1000}
= 0.4 \text{m} \times 0.1 \text{m} \times 0.05 \text{m}
V = 0.002 m^3
\rho = m/V
  = 0.85/0.002
  = 425 kg/m^3
m = 1L = 1kg
                    7.2
\rho = 0.92 \text{kg/L}
V = m/\rho
  = 1/0.92 = 1.09L
                    7.3
(a) m = 5kg
\rho = 8200 \text{kg/m}^3
V = m/\rho = 5/8200
  = 6.01x10^{-4}m^3
(b) m = 200g
= 200/1000 = 0.2kg
\rho = 11300 \text{kg/m}^3
V = m/\rho = 0.2/11300
  = 1.77 \times 10^{-5} \text{m}^3
(c) m = 0.2kg
\rho = 19300 \text{kg/m}^3
V = m/\rho = 0.2/19300
  = 1.04 \times 10^{-5} \text{m}^3
\rho = 1.3 \text{kg/m}^3
                    7.4
V = 8m \times 5m \times 4m
   = 160 m^3
m = \rho \times V
   = 160x1.3
   = 208kg
F = 75N
                    7.5
A = 1.5 cm^2
(1m)^2 = (100cm)^2
1/10^4 \text{m}^2 = 1 \text{cm}^2
1.5cm<sup>2</sup>=0.00015m<sup>2</sup>
P = F/A
  = 75/0.00015
  = 5x10<sup>5</sup>Pa
L = 10mm
                    7.6
= 10/1000 = 0.01m
A = LxL = 0.01x0.01
  = 1x10^{-4}m^2
```

F = 20N $P = F/A = 20/10^{-4}$ $= 2x10^5 N/m^2$ m=1000g=1kg 7.7 $A = 7.5 \text{cm} \times 7.5 \text{cm}$ $=\frac{7.5m}{1.00} \times \frac{7.5m}{1.00}$ $= 0.075 \text{m} \times 0.075 \text{m}$ $A = 0.005625m^2$ F = mg= 1x10 = 10NP = F/A= 10/0.005625 $= 1778N/m^2$ $V = \frac{20cm}{100} \times \frac{7.5cm}{100} \times \frac{7.5cm}{100}$ = 0.2m x 0.075m x 0.075m $V = 0.001125m^3$ $\rho = m/V$ = 1/0.001125 $= 888.89 \text{kg/m}^3$ کیوب کے ماس اور ڈینسٹی کے لحاظ سے 7.8 اس كااصل واليوم m = 306g $\rho = 2.55 \text{g/cm}^3$ $V_0 = m/\rho$ = 306/2.55= 120cm³ کیوپ کی شکل کی وجہ سے اس کا والیوم $V_s = 5x5x5 = 125cm^3$ Vc=Vs-Vo = كيويڻ كا واليوم $V_c = 125-120=5 cm^3$ 7.9 $W_{air} = 18N$ $W_{water} = 11.4N$ $D=(W_{air}/W_{air}-W_{wat})\rho$ D = (18/6.6)x1000 $= 2727 kg/m^3$ (AI) W = 3.06N7.10 m = W/g = 3.06/10= 0.306kg = 306g $\rho = 0.6g/cm^3$ (a) $V = m/\rho$ = 306/0.6 =510cm³ (b) $V = m/\rho$ $= 306/0.9 = 340 \text{cm}^3$ $F_2 = 20000N | 7.11 |$ یریس کے پیٹن کااپریا D = 30cmR = D/2 = 30/2= 15cm = 0.15m $A = \pi R^2$ $= 3.14x(0.15)^2$

پہپ کے پسٹن کاایریا d = 3cmr = d/2 = 3/2= 1.5cm=0.015m² $a = \pi r^2$ $= 3.14x(0.015)^2$ $= 0.0007065 m^2$ $F_2/A = F_1/a$ $F_1 = F_2xa/A$ =20000x0.0007065 0.07065 $F_1 = 14.13/0.07065$ $F_1 = 200N$ $A = 2x10^{-5} n^2$ 7.12 F = 4000N L = 2m = اصل لمبائی $\Delta L = 2mm$ = 2/1000 = 0.002m $Y = FxL/Ax\Delta L$ =4000x2/2x10⁻⁵x 002 $= 8000/4 \times 10^{-8}$ $Y = 2x10^{11}N/m^2$ CHAPPTER # 08 Exp: 1, 2, 3, 4 8.1 $C = 50^{\circ}C$ $F = 1.8^{\circ}C + 32$ = 1.8x50+32 $F = 122^{0}F$ $F = 98.6^{\circ}F$ 8.2 C = (F-32)/1.8= (98.6-32)/1.8 $= 37^{\circ}C$ K = C + 273200 = 37+273 = 310K8.3 $L_0 = 2m$ $T_1 = 0^{\circ}C = 273K$ $T_2 = 20^{\circ}C = 293K$ $\alpha = 2.5 \times 10^{-5} \text{K}^{-1}$ $\Delta L = \alpha L_0(T_2-T_1)$ $= 2.5 \times 10^{-5} \times 2(293-273)$ $= 2.5 \times 10^{-5} \times 2(20)$ $= 2.5x40x10^{-5}$ $= 100/10^{5}$ = 0.001m = 0.1cm 8.4 $V_0 = 1.2m^3$ $T_1 = 15^{\circ}C = 288K$ $T_2 = 40^{\circ}C = 313K$ $\beta = 3.67 \times 10^{-3} \text{K}^{-1}$ $V = V_0(1+\beta\Delta T)$ =1.2[1+3.67x10⁻³(313-288)] $= 1.2[1+3.67x10^{-3}(25)]$ = 1.2[1+0.09175]

 $V = 1.3 m^3$

8.5 m = 0.5kg $T_1 = 10^{\circ}C = 283K$ $T_2 = 65^{\circ}C = 338K$ C = 4200J/kgK $\Delta Q = Cm\Delta T$ = 0.5x4200(338-283)= 05x4200x55 $\Delta Q = 115500J$ 8.6 $\Delta Q = 1000 J/s$ m = 200g = 0.2kg $T_1 = 20^{\circ}C = 293K$ $T_2 = 90^{\circ}C = 363K$ $Q = Cm\Delta T/t$ t = 4200x0.2(363-293)/Qt = 840(70)/1000t = 58800/1000 t = 58.8s8.7 $\Delta Q = 50000 J$ $H_{f} = 336000 K/kg$ $\Delta Q = H_f m$ $m = \Delta Q/H_f$ m = 50000/336000= 0.149 kg= 150gm=100g=0.1kg 8.8 برف کو گرم کرنے کے لیے درکار حرارت $Q_1 = Cm\Delta T (-10 \rightarrow 0)$ $= 2100 \times 0.1[0 - (-10)]$ $^{1}Q_{1} = 2100J$ برف کو پکھلانے کے لیے درکار حرارت $\mathfrak{A}_{\mathfrak{D}} = \mathsf{mH}_{\mathsf{f}} \quad (@ 0^{\circ}\mathsf{C})$ **10 = 0.1x336000** Q₂≥ 33600J یانی کو گرم کرنے کے لیے در کار سیارت • $Q_3 = Gm\Delta T (0 \rightarrow 10)$ = 4200x0.1(10-0) Q3 = 4200J Q1+Q2+Q3 = كل حرارت = 2100+33600+4200 Q = 39900J $T = 100^{\circ}C$ 8.9 m = 100g = 0.1kg $H_v = 2.26xx10^6 J/kg$ $\Delta Q = mH_v$ $= 0.1x2.26x10^6$ $= 2.26 \times 10^{5} J$ 8.10 $m_{\text{steam}} = 5g$ = 5/1000 = 0.005kg $m_{water} = 500g$ = 500/1000 = 0.5kg یانی کی پہلے ٹمپر پچر ہے آخری ٹمپر پچر تک ایناں کے لحاظ سے جذب کردہ حرارت

 $Q_p = Cm\Delta T$ $= Cm(T_2-T_1)$ $= 2100 \times 0.5(T_2-10)$ $= 2100T_2-21000$ ماس کے لحاظ سے بھاپ کی خارج کردہ حرارت $Q = mH_v$ $= 0.005x2.26x10^{6}$ = 11300Jبھاپ کی پہلے ٹمپر پچرے آخری ٹمیر کچر تک جاتے ہوئے خارج کر دہ حرارت $Q = Cm\Delta T$ $= 4200 \times 0.005 (100 - T_2)$ $= Q = 2100-21T_2$ = یانی کی جذب کرده حرارت بھاپ کی خارج کر دہ حرارت 2100T₂-2100= 11300+2100-21T₂ 2100T₂+21T₂= 11300+2100+21000 $2121T_2 = 34400$ $T_2 = 34400/2121$ $T_2 = 16.21$ °C CHAPPTER # 09 9.1 $A = 200m^2$ L = 20cm = 0.2m $T_1 = 15^{\circ}C = 288K$ $T_2 = 35^{\circ}C = 308K$ k = 0.65 W/mK $Q/t = kA(T_2-T_1)/L$ = <u>0.65x200(308-288)</u> = 130x(20)/0.2= 13000 J/s $A = 2x2.5 = 5m^29.2$ L = 0.8cm = 0.008mt = 1hr = 3600s $T_1 = 5^{\circ}C = 278K$ $T_2 = 25^{\circ}C = 298K$ k = 0.8 W/mK $Q = kA(T_2-T_1)xt/L$ $= 0.8 \times 5(298 - 278) \times 3600$ 0.008 = 4(20)3600/0.008= 288000/0.008 = 36000000 $Q = 3.6x10^7 J$ Amjid Ali Dar Chak No 149 JB Money, Chiniot 0344-7763733

 $= 0.07065 m^2$

NUMERICAL: 10
Ensonenenenenenenenenenenene E
CHAPPTER # 10
Exp: 1, 2, 3
T = 2s 10.1
g _e = 10m/s
•
$g_m = g_e/6$
= 10/6
= 1.67m/s
L = ?
$T = 2\pi \sqrt{l/g}$
* 3 <u>927 .</u>
$T^2 = [2\pi\sqrt{l/g}]^2$
$T^2 = 4\pi^2 x L/g$
$L = T^2xg/4\pi^2$
زمین کے لیے لمبائی
$L = (2)^2 10/4(3.14)^2$
= 10/9.8596
= 1.02m
3,11 0
جاند کے لیے لمبائی
$L=(2)^21.67/4(3.14)^2$
= 1.67/9.8596
= 0.17m
L = 0.99m 10.2
T = 4.9s
$T = 2\pi \sqrt{l/g}$
$T^2 = [2\pi\sqrt{l/g}]^2$
$T^2 = 4\pi^2 x L/g$
$g = 4\pi^2 x L/T^2$
$=4(3.14)^2 \times 0.99/(4.9)^2$
=4(9.8596)(0.99)/24.01
$g = 1.63 \text{m/s}^2$
L = 1m 10.3
g _e = 10m/s
gm = 1.67m/s
$T = 2\pi \sqrt{l/g}$
زمین کی سطح پر ٹائم پیریڈ
$T = 2(3.14)\sqrt{1/10}$
$=6.28\sqrt{0.1}=2s$
حاند کی سطح پر ٹائم پیریڈ
•
$T = 2(3.14)\sqrt{1/1.6}$
$=6.28\sqrt{0.598}$
= 4.9s
T = 2s 10.4
$g = 10 \text{m/s}^2$
$T = 2\pi \sqrt{l/g}$
$T^2 = [2\pi \sqrt{l/g}]^2$
$T^2 = 4\pi^2 x L/g$
$L = T^2xg/4\pi^2$
$= (2)^2 \times 10/4(3.14)^2$
, , , , , , , , , , , , , , , , , , , ,
= 4x10/4x9.85
= 40/39.4

```
L = 1.02m
                   10.5
t = 20s
 n = 100 = ويوز کې تعداد
\lambda = 6 \text{cm}
  = 6/100
  = 0.06m
وقت/وپوز کی تعداد = f
  = n/t
 = 100/20
  = 5Hz
T = 1/f
  = 1/5
  = 0.2s
V = f\lambda
  = 5x0.06 = 0.3 \text{m/s}
f = 12Hz
                10.6
\lambda = 3 \text{cm}
 = 3/100
 = 0.03m
V = f\lambda
  = 12x0.03
  = 0.36 \text{m/s}
f = 190Hz
S = 90m
t = 0.5s
        (a) ٹائم پیریڈ
T = 1/f
T = 1/190
  = 0.005s
         (b) پیڈ
V = S/t
V = 90/0.5
  = 180 \text{m/s}
        (c)ويولينگتھ
V = f\lambda
\lambda = V/f
\lambda = 180/190
  = 0.95 m
                   10.8
f = 4.8Hz
\lambda = 6 \text{cm}
  = 0.06m
         (a) پيدُ
V = f\lambda
V = 4.8 \times 0.06
  = 0.29 \text{m/s}
        (b)ٹائم پیریڈ
T = 1/f
T = 1/4.8
  = 0.21s
f = 5Hz
                   10.9
\lambda = 40 \text{mm}
```

```
= 40x10^{-3}m
  S = 80cm
    = 80/100
    = 0.8m
 V = f\lambda
    = 5x40x10^{-3}
    = 0.2 \text{m/s}
  S = Vt
  t = S/V
   = 0.8/0.2
   = 4s
  f = 90MHz
                   10.10
   = 90x10^{6}Hz
  V = 3x10^8 \text{m/s}
  V = f\lambda
  \lambda = V/f
    = 3x10^8/90x10^6
    = 3.33m
    CHAPPTER # 1
         Exp: 2, 3
  I = 3x10^{-6}W/m^211.1
  I_0 = 10^{-12} W/m^2
         (a) ساؤنڈ لیول
  S.L = 10logI/I_{\circ}(dB)
  = 10\log(3x10^{-6}/10^{-12})
  = 10\log(3x10^6)
  = 10[log3+log10^6]
  = 10[log3+6log10]
T 10[0.4771+6(1)]
 64.771
  €64.8dB
S.I = 100dB
S.L = 10logI/I<sub>6</sub>(dB)
  190 = 10logI/10-12
  10 - logI/10<sup>-12</sup>
      دونوں طرف انٹی لاگ لیا
  10^{10} \le I/10^{-12}
  10^{10} \times 10^{-12} = I
  10^{-2} = I
  I = 0.01W/m^2
  S.L = 80dB
  I_0 = 10^{-12} W/m^2
  S.L = 10logI/I_o(dB)
  80 = 10\log I/10^{-12}
  8 = \log I/10^{-12}
      دونوں طرف انٹی لاگ لیا
  10^8 = I/10^{-12}
  10^8 \times 10^{-12} = I
  I = 10^{-4} W/m^2
```

```
11.3
V = 330 \text{m/s}
\lambda = 5 \text{cm}
  = 5/100
  = 0.05 m
V = f\lambda
330 = f \times 0.05
f = 330/0.05
 = 6.6 \times 10^3 Hz
     ساؤنڈ قابل ساعت ہے
n = 72 11.4 ويوزكى
تعداد
t = 60s
        (a) فریکونسی
وقت/وپوز کی تعداد = f
f = n/t
 = 72/60
 = 1.2Hz
       (b) ٹائم پیریڈ
T = 1/f
  = 1/1.2
  = 0.83s
                   11.5
T = 1.5s
t = 1.5/2
 = 0.75s
V = 1500 \text{m/s}
S = Vt
  = 1500 \times 0.75
  = 1125m
 الم صرف ایک طرف کالیاجائے گا
T = 5s
                   11.6
t = 5/2
 = 2.5s
V = 346 \text{m/s}
S = Vt
   = 346x2.5
   = 865 m
 ٹائم صرف ایک طرف کالیاجائے گا
                   11.7
T = 3.42s
t = 3.42/2
  = 1.71s
V = 1531 \text{m/s}
S = Vt
   = 1531x1.71
   = 2618m
 ٹائم صرف ایک طرف کالیاجائے گا
V = 343 \text{m/s}
                  11.8
f = 20000Hz
  (a) بلند ترین فریکو نسی کے لیے
V = f\lambda
343 = 20000 \times \lambda
```

 $\lambda = 343/20000$ $\lambda = 1.7 \times 10^{-2} \text{m}$ (b) کم ترین فریکو نسی کے لیے $V = f\lambda$ $343 = 20 \times \lambda$ $\lambda = 343/20 = 17.2m$ 11.9 f = 2kHz= 2000Hz $\lambda = 35 \text{cm}$ = 35/100= 0.35mS = 1.5km $= 1.5 \times 1000$ =1500m $V = f\lambda$ $= 2000 \times 0.35$ = 700 m/sS = Vtt = S/V= 1500/700 = 2.1sCHAPPTER # 12 Exp: 1, 2, 3, 4 p = 10cm12.1 q = -5cmالیج مرر کے پیچھے ،اس لیے نفی آیا 1/f = 1/p + 1/q= 1/10 + 1/(-5)f = -10cm(diverging-mirror) 12.2 HO = 30cmp = 10.5cmf = 16cm1/f = 1/p + 1/q1/16 = 1/10.5 + 1/q1/q = 1/16 - 1/10.5=(10.5-16)/16x10.51/q = -168/5.5q = 30.54cm(converging-mirror) HI:ا میج کی او نجائی HO: جسم كى او نجائى HI/HO = q/pHI/30 = 30.54/10.5HI = 87.26cm12.3 p = 20cmHI/HO = q/pHI/HI = q/p1 = q/pq = p = 20cm1/f = 1/p + 1/q= 1/20 + 1/20

f = 10cm12.4 p = 34.4cmq = -5.66cm(diverging-mirror) 1/f = 1/p + 1/q= 1/34.4 + 1/(-5.66)=(5.66-34.4)/34.4x5.66f = -194.7/28.74= -6.77cm 12.5 f = -13.5cmq = -11.5cm1/f = 1/p + 1/q1/(-13.5)=1/p+1/(-11.5)1/p = 1/11.5 - 1/13.5=(13.5-11.5)1.5x13.5 p = 155.25/2= 77.62cmf = -8.70cm 12.6 HO = 13.2cm p = 19.3cmp = 2p = 2(19.3)= 38.4cm 1/f = 1/p + 1/q1/(-8.70)=1/19.3+1/ 1/q = 1/8.70+1/19.3 =(19.3-8.70)/8.70x19.3q = 167.91/10.6= 15.84(b) الميح كى او نجائى HI/HO = q/pI/13.2 = 16.84/19.3HI = 10.8cm(c) الميح كى او نجائى HI/HO = q/pI/13.2 = 15.84/38.4HI = 5.42cm12.7 R = 38cmf = R/2= 38/2= 19cm p = 50cm1/f = 1/p + 1/q1/19 = 1/50 + 1/q1/q = 1/19-1/50= (50-19)/19x50q = 950/31= 30.64cmامیج سید هی ہوگی HO = 4cm12.8

p = 12cm

1/f = 1/p + 1/q

1/8 = 1/12 + 1/q

f = 8cm

1/q = (6-4)/48q = 24cm(b) الميح كى او نجائى HI/HO = q/pHI/4 = 24/12HI = 8cmامیجی،رئیل،الٹی،بڑی O = 10cmp = 20cmf = -15cm1/f = 1/p + 1/q1/(-15) = 1/20 + 1/q1/q = (-4-3)/60q = -8.75cmHI/HO = q/pHI/10 = 8.75/20HI = 4.28cmامیج ، در چو نک ، سید هی ، بڑی f = 6cmq/p = 3/1q = 3p = -3p1/f = 1/p + 1/q1/6 = 1/p + 1/(-3p)p = 4cm $i = 35^{\circ}$ n = 1.25(a) اینگل آف ر فریکشن n= Sini/Sinr $\mathfrak{Q}_{25} = \operatorname{Sin}_{35^{\circ}} / \operatorname{Sinr}_{35^{\circ}}$ Sinr = 0.57/1.25Sim = 0.45 $r = Sin^{-1}(0.45)$ 7 27.32° (b) کریٹیکل اینگل کے ایک n = Sinr/Sini 1.25 = Sin90⁰/Sin**C** Sin**C** ≥ 1/1.25 Sin**C**= 0.80 $C = Sin^{-1}(0.80)$ $= 53.13^{\circ}$ P = 5Df = 1/P= 1/5= 0.2mميثر كوسينثي ميثربنايا f = 20cmq/p = 2/1q = 2p1/f = 1/p + 1/q1/20 = 1/p + 1/2p

p = 30cmCHAPPTER # 13 Exp: 1, 2 13.1 $Q = 100\mu C$ $= 100 \times 10^{-6} \text{C}$ =10⁻⁴C $e^{-} = 1.6 \times 10^{-19} \text{C}$ Q = nen = Q/e12.9 $= 10^{-4}/1.6 \times 10^{-19}$ $= 0.625 \times 10^{-4+19}$ $n = 6.25 \times 10^{14}$ 13.2 $q_1 = 10 \mu C$ $= 10x10^{-6}C$ $= 10^{-5}C$ $q_2 = 5\mu C$ $= 5x10^{-6}C$ r = 150cm= 150/100= 1.5 m12.10 $k = 9x10^9 Nm^2/C^2$ $F = kq_1q_2/r^2$ =9x10⁹x10⁻⁵x5x10⁻⁶ $(1.5)^2$ $= 45x10^{9-5-6}/2.25$ $F = 20x10^{-2}$ = 20/10012.11 = 0.2Nد فع کی فورس ، مثبت جارجز F = 0.8N13.3 r = 0.1m $k = 9x10^9 Nm^2/C^2$ $F = kq_1q_2/r^2$ $0.8=9x10^9xq^2/(0.1)^2$ $q^2 = 0.8 \times 0.01 / 9 \times 10^9$ $= 8x10^{-3}/9x10^{9}$ $= 0.888 \times 10^{-12}$ $\sqrt{q^2} = \sqrt{0.88} \times \sqrt{(10^{-6})^2}$ $q = 0.942x10^{-6}$ $= 9.42 \times 10^{-7} \text{C}$ 13.4 F = 0.1Nr = 5cm= 5/100= 0.05 m12.12 $k = 9x10^9Nm^2/C^2$ $F = kq_1q_2/r^2$ $q^2 = Fr^2/k$ $= 0.1x(0.05)^2/9x10^9$ $=0.1x0.0025x10^{-9}/9$ $q^2 = 2.8x10^{-5}x10^{-9}$ $= 2.8 \times 10^{-14} \text{C}$ 2cm کے لیے کولمب فورس r = 2cm= 2/100

= $0.02m$ $q^2 = 2.8x10^{-14}C$ $F = kq_1q_2/r^2$ = $9x10^9x2.8x10^{-14}$ $(0.02)^2$ = $(25.2/0.0004)x10^{9-14}$ = $63000x10^{-5}$ F = 0.63N $V = 10^4V$ $q = 100\mu C$ = $100x10^{-6}$ = $10^{-4}C$ V = W/q $10^4 = W/10^{-4}$ $W = 10^4x10^{-4}$ $W = 10^0$ W = 1J
q = +2C 13.6
$V_a = 100V$ $V_b = 50V$ $W = q(V_a-V_b)$ $= 2(100-50)$ $= 100J$
V = 9V 13.7
Q = 0.06C
Q = CV
$0.06 = 9 \times C$
C = 0.06/9
$= 6.67 \times 10^{-3} \text{F}$
$Q_1 = 0.03C$ 13.8
V ₁ = 6V
$Q_2 = 2C$
مختلف ڈیٹا کے لیے بھی کیپسی ٹینس وہی
300 Sept. 100 Se
رہے گی کیونکہ کیبپٹرایک ہی ہے
C = C
$Q_1/V_1 = Q_2/V_2$
$V_2 = Q_2 x V_1 / Q_1$
= 2x6/0.03
= 400V
$C_1 = 6\mu C$ 13.9
$C_2 = 12\mu C$
V = 12V
$1/C_{eq} = 1/C_1 + 1/C_2$
= 1/6 + 1/12
= 4µC
سیریز میں تمام کیبیسٹرزپر چارج
ایک جبیبا ہو گا
$Q = C_{eq}V$
$= 4x10^{-6}x12$
= 48x10 ⁻⁶
= 48µC
$V_1 = Q/C_1$
= 48x10 ⁻⁶ /6x10 ⁻⁶
.52.10 /52.10

```
= 8V
V_2 = Q/C_2
  = 48x10^{-6}/12x10^{-6}
  = 4V
               13.10
C_1 = 6\mu C
C_2 = 12\mu C
V = 12V
C_{eq} = C_1 + C_2
     = 6+12
     = 18 \mu F
پیرالل میں مرکبیسٹرز پر پوٹینشل ایک
         جيبا ہو گا
p.d = 12V
Q_1 = C_1 V \ge
   = 6µx12\
    =72\mu C
Q_2 = C_2V
    = 12 \mu x 12
    = 144µC
 CHAPPTER #1
   Exp: 1, 2, 6, 7
I = 3mA
                14.1
 = 3x10^{-3}A
t = 1mints
 = 60s
I = Q/t
3x10^{-3} = Q/60
Q = 60x3x10^{-3}
   = 180 \times 10^{-3} \text{C}
(a) خشک جلدے کرنٹ
R = 1000000
V = 12V
V = IR
12 = 1 \times 10^5
I = 12/10^5
 = 1.2x10^{-4}A
    (b) کیلی جلدے کرنٹ
R = 1000\Omega
V = 12V
V = IR
12 = 1 \times 1000
I = 12/1000
 = 1.2x10^{-2}A
R = 10M\Omega
                  14.3
  = 10 \times 10^{6} \Omega
V = 100V
V = IR
100 = 1 \times 10^7
 = 100/10^7
 = 1/10^5
 = 1/10^2 \times 10^3
```

 $= (1/100)x10^{-3}$

```
= 0.01 mA
                     14.4
  V = 10V
    = 1.5A
  t = 2mints
    = 120s
  R = V/I
     = 10/1.5
      = 6.667\Omega
  W = I^2Rt
  = (1.5)^2 \times 6.667 \times 120
  W = 1800J
  R_1 = 2k\Omega
                     14.5
  R_2 = 8k\Omega
  V = 10V
  (a) R_e = R_1 + R_2
          = 2+8
          = 10k\Omega
    (b)سیریرز میں ہر رزسٹنس پر
        ? نٹ ایک جیسا ہو گا
  V = IR_e
  10 = I \times 10 \times 10^3
  I = 1x10^{-3}
    = 1mA
                        (c)
  V_1 = IR_1
        = 1x10^{-3}x2x10^{3}
        = 2V
V_2 = IR_2
     = 1x10^{-3}x8x10^{3}
      = 8V
                     14.6
   R_0 = 6k\Omega
  R_2 = 12k\Omega
2€V
                        (a)
  10R=1/R<sub>1</sub>+1/R<sub>2</sub>
        = 1/6+1/12
    Γ= 4kΩ
    (b) پیرالل میں ہر رز سے
                        (c)
  V = I_1R_1
  6 = I_1 \times 6 \times 10^3
  l_1 = 6/6 \times 10^3
     = 1mA
  V = I_2R_2
  6 = I_2 \times 12 \times 10^3
  l_2 = 6/1210^3
     = 0.5 \text{mA}
  V = 220V
                     14.7
  P = 100W
  5h = گفٹے
```

```
30 = ون
t = 5x30
 = 150h
P = VI
  = V(V/R)
P = V^2/R
100 = (220)^2/R
R = 48400/100
  =484\Omega
E = Pxhours/1000
= 100x150/1000
= 15kWh
               14.8
P = 150W
R = 95\Omega
P = VI
  = V(V/R)
P = V^2/R
150 = V^2/95
V^2 = 150x95
V^2 = 14250
\sqrt{V^2} = \sqrt{14250}
V = 120V
                14.9
 10 بلبلوں کے صرف شدہ یو نئس
P = 10x60 = 600W
t = 5x30 = 150h
E_b = Pxh/1000
   =600x150/1000
   = 90kWh
 4 پنگھوں کے صرف شدہ یونٹس
P = 4x75 = 300W
t = 10x30 = 300h
E_p = Pxh/1000
   = 300x300/1000
   = 90kWh
 1 تی وی کے صرف شدہ یو نٹس
P = 1x250 = 250W
t = 2x30 = 60h
E_t = Pxh/1000
  = 250x60/1000
  = 15kWh
 1 استری کے صرف شدہ یونٹس
P =1x1000=1000W
t = 2x30 = 60s
E_i = Pxh/1000
  = 1000x60/1000
  = 60kWh
U_T = E_b + E_p + E_t + E_i
   = 90+90+15+60
   = 225kWh
Rs = 4 = في يوننش قيت
-/e = 4x225=1020 بل
```

$V = 250V$ $P = VI$ $100 = 250 \times I$ $I = 100/250 = 0.4A$ $I = 100/250$ $I = 1$	14.10 بلب کے لیے کرنٹ، رزسٹنس P = 100W
$I = 100/250 = 0.4A$ (b) $V = IR$ $250 = 0.4xR$ $R = 250/0.4 = 625\Omega$ $I = 250/0.4 = $	(a)
$250 = 0.4xR$ $R = 250/0.4 = 625\Omega$ $x = 250/0.4 = 625\Omega$ $x = 250$	I = 100/250 = 0.4A (b)
$P = 4kW = 4000W$ $V = 250V$ (a) $P = VI$ $4000 = 250 \times I$ $I = 4000/250 = 16A$ (b) $V = IR$ $250 = 16xR$ $R = 250/16 = 15.6\Omega$ $R = 5.6\Omega$ $R = 5.6\Omega$ $R = 5.6\Omega$ $R = 0.5A$ $R = (0.5)^2x5.6$ $R = (0.5)^2x5.6$ $R = 1.4W$ $R = (0.5)^2x5.6$ $R = 1.5W$ $R = (0.5)^2x5.6$ $R = 1.5W$ $R = (0.5)^2x5.6$ $R = 1.5W$ $R = (0.5)^2x5$ $R = (0.5)^$	250 = 0.4xR R = $250/0.4 = 625\Omega$
P = VI $4000 = 250 \times I$ I = 4000/250 = 16A (b) V = IR 250 = 16xR R = 250/16 = 15.6Ω R = 5.6Ω	P = 4kW = 4000W V = 250V
$V = IR$ $V = IR$ $V = IR$ $V = 16x$ $V = 16x$ $V = 250/16 = 15.6\Omega$ $V = 3V$ $V = 3V$ $V = 3V$ $V = 1^2R$ $V = (0.5)^2x5.6$ $V = 1.4VV$ $V = 3x$	P = VI 4000 = 250 x I
$R = 5.6\Omega$	V = IR
الا	$R = 5.6\Omega$ 14.11
= $(0.5)^2x5.6$ = $1.4VV$ $y_2 = 1.4VV$ Pb = VI = $3x0.5$ = $1.5VV$ $y_3 = 1.5VV$ $y_4 = 1.5VV$ $y_5 = 1.5VV$ $y_7 = 1.5VV$ $y_8 = 1.5VV$ $y_9 = 1.5VV$	(a)رز سٹر کے لیے پاور
$P_b = VI$ $= 3x0.5$ $= 1.5W$ (c) $Exp: 1$	$= (0.5)^2 x 5.6$ = 1.4VV
رز سننس کی وجہ سے ضائع ہو جاتی ہے ۔ رز سننس کی وجہ سے ضائع ہو جاتی ہے ۔ $ \begin{array}{l} \text{CHAPPTER # 15} \\ \text{Exp: 1} \\ \text{Vp = 240V} \\ \text{Vs = 12V} \\ \text{Np = 2000} \\ \text{Ns/Np = Vs/Vp} \\ \text{Ns/2000 = 12/240} \\ \text{Ns = 12x2000/240} \end{array} $	$P_b = VI$ $= 3x0.5$
Exp: 1 $V_p = 240V$ 15.1 $V_s = 12V$ $N_p = 2000$ $N_s/N_p = V_s/V_p$ $N_s/2000 = 12/240$ $N_s = 12x2000/240$	(C) پچھ پاور بیٹری کے اندر ونی
$V_p = 240V$ 15.1 $V_s = 12V$ $N_p = 2000$ $N_s/N_p = V_s/V_p$ $N_s/2000 = 12/240$ $N_s = 12x2000/240$	CHAPPTER # 15
$N_s/N_p = V_s/V_p$ $N_s/2000 = 12/240$ $N_s = 12x2000/240$	$V_p = 240V$ 15.1 $V_s = 12V$
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$N_s/N_p = V_s/V_p$ $N_s/2000 = 12/240$
N _p = 1 15.2	= 100 N _p = 1 15.2
$N_s = 100$ (step-up) $V_p = 20V$ $N_s/N_p = V_s/V_p$ $100/1 = V_s/20$	$V_p = 20V$ $N_s/N_p = V_s/V_p$
V _s = 100x20/1 = 2000V	$V_s = 100x20/1$

```
15.3
N_p = 100
N_s = 1
            (step-down)
V_p = 170V
I_p = 1 \text{mA} = 1 \text{x} 10^{-3} \text{A}
N_s/N_p = V_s/V_p
1/100 = V_s/170
V_s = 1x170/100
    = 1.7V
  ان پٺ ياور =آوٺ پٺ ياور
V_s|_s = V_p|_p
1.7xI_s = 170x1x10^{-3}
I_s = 170 \times 10^{-3} / 1.7
  = 0.1A
V_p = 240V_2 = 15.4
Vs = 12V
N_p = 4000
I_{s} = 0.4A
N_s/N_p = V_s/V_p
N_s/4000 = 12/240
12x40

= 200

ان پٹ پاور = آوٹ پٹ پاور

= Vplp

م40xlp
N_s = 12x4000/240
V_sI_s = V_pI_p
I_p = 12x0.4/240
   = 0.02A
                  15.5
P = 500MW
   = 500 \times 10^{6} W
V = 250kV
   = 250 \times 10^{3} \text{V}
P = VI
500x10<sup>6</sup>=250x10<sup>3</sup>I
I=500x106/250x103
 = 2x10^3A
Pgen = 150kW | 15.6
      = 150 \times 10^{3} \text{W}
V_{wire} = 10000V
R = 2\Omega
S = 5km
  = 5000 m
  تارمیں یاور جبزیٹر کی وجہ سے
P_{gen} = P_{wire}
150x10^3 = V_{wlw}
150x103=10000x Iw
I_w = 150 \times 10^3 / 10000
   = 15A
 تارمیں ضائع ہونے والا وولٹج یاوولیٹج
          ڈراپ
V_d = I_w R
    = 15x2 = 30V
   تار میں ضائع ہونے والی یاور
P_{loss} = V_d I_w
```

```
= 30x15 = 450W
   شہر کے ٹرانسار مر کو تار سے جوو ولیٹج ملا
  V_T = V_{in} - V_d
       = 10000 - 30
       = 9970V
    CHAPPTER # 18
        Exp: 1, 2, 4
                    18.1
   T_{1/2} = 7.3s
    آخری ہاف لائف تک دیا گیاعرصہ
   T_p = 29.2s
   T_p = nT_{1/2}
   29.2 = n \times 7.3
   n = 29.2/7.3 = 4
   N = N_0/2^n
      = N_0/2^4
      = N_0/16
     سولہ وال حصہ باقی رہ جائے گا
   T_{1/2} = 5.25Y
                   18.2
   T_p = 26Y
   T_p = nT_{1/2}
   26 = n \times 5.25
   n = 26/5.25 = 5
   N = N_0/2^n
      = N_0/2^5
      = N_0/32
     بتیس وال حصہ باقی رہ جائے گا
T_{1/2} = 5730Y 18.3
 No = اصل مقدار ت
  N = N<sub>0</sub>/8 = باتی تورہ
   No/2n
   N_0/8 = N_0/2^n
 2/2^3 = 1/2^n
  · 23 ± 2n
  15 3T
   T<sub>p</sub> = nT<sub>1/2</sub>
3.x 5730
       ≠17190
       5√07x10⁴Y
   T_{1/2} = 6h
                     18.4
   T_p = 36h
   T_p = nT_{1/2}
   36 = n \times 6
   n = 36/6 = 6
   No = اصل مقدار
            = 200 mg
   N = باتی مقدار
   N = N_0/2^n
      = 200/2^6
      = 200/64
      = 3.12mg
```

 $T_{1/2} = 10mint$

18.5

```
No = اصل مقدار
        = 368c/m
N = 23c/m = ماتی مقدار
N = N_0/2^n
23 = 368/2^n
2^n = 368/23
2^{n} = 16
2^n = 2^4
n = 4
T_p = nT_{1/2}
   = 4 \times 10
   = 40mint
     دوہاف لا ئف کے بعد
                  18.6
T_p = 4mint
T_p = nT_{1/2}
4 = 2 \times T_{1/2}
T_{1/2} = 4/2 = 2mint
T_{1/2} = 1500Y | 18.7
No = اصل مقدار
        = 32000c/m
N = No/16 = ياتي مقدار
N = N_0/2^n
N_0/16 = N_0/2^n
16 = 2^n
2^4 = 2^n
n = 4
T_p = nT_{1/2}
= 4 \times 1500
= 6000Y
T_{1/2} = 4000Y
                 18.8
t = 8h
C.R = 310,300,280,
270,312,305,290
کاونٹ ریٹ میں بے ترتیبی ظاہر کرتی
ہے کہ اس کی ہاف لائف چار ہزار بہت
 زیادہ ہے اور مشاہدہ کا ٹائم آٹھ گھٹے
        بہت کم ہے
18.9 مقدار = No
No/8 = N = باتی مقدار
T_{1/2} = 5730Y
N = N_0/2^n
N_0/8 = N_0/2^n
1/8 = 1/2^n
8 = 2^{n}
n = 3
T_p = nT_{1/2}
   = 3 \times 5730
   = 17190Y
    Amjid Ali Dar
Chak 149 JB Chiniot
```